

***Quercus rubra* / *Carex pensylvanica* - *Ageratina altissima* var. *roanensis* Forest**

COMMON NAME	Red Oak / Pennsylvania Sedge - Appalachian White Snakeroot Forest
SYNONYM	High Elevation Red Oak Forest (Tall Herb Type)
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N)
FORMATION	Lowland or submontane cold-deciduous forest (I.B.2.N.a)

ALLIANCE *Quercus rubra* Montane Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This type occurs on most of the major mountain ranges of the southern Appalachians in North Carolina, Tennessee, and Virginia.

Great Smoky Mountains National Park

This community was sampled from a single location, in the southwestern portion of the Mount Le Conte quadrangle, on the western ridge of Balsam Point (4640 feet elevation). It was not found on the Cades Cove quadrangle but could occur there as well as in other areas of the Park.

ENVIRONMENTAL DESCRIPTION

Globally

This community occurs at elevations over 1400 m (4500 feet) on broad ridges and on steep rocky slopes at the heads of coves, often with north or southeast aspects. Occurrences of this community on exposed slopes and south- and west-facing ridges are subject to lightning-caused fires and damage by ice and wind. Damage by ice storms is probably the most common form of natural disturbance.

Great Smoky Mountains National Park

This type was sampled on a steep, south-facing, high slope at an elevation of 4640 feet. The site showed evidence of Chestnut Blight.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Quercus rubra</i>
Herbaceous	<i>Carex pensylvanica</i> , <i>Ageratina altissima</i> var. <i>roanensis</i> , <i>Thelypteris noveboracensis</i> , <i>Dennstaedtia punctilobula</i>

Great Smoky Mountains National Park

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Quercus rubra</i>
Subcanopy	<i>Acer rubrum</i>
Tall shrub	<i>Halesia tetraptera</i> var. <i>monticola</i> , <i>Ilex montana</i>
Short shrub	<i>Rubus canadensis</i>
Herbaceous	<i>Carex pensylvanica</i>

CHARACTERISTIC SPECIES

Globally

Quercus rubra, *Carex pensylvanica*, *Ageratina altissima* var. *roanensis*

Great Smoky Mountains National Park

Quercus rubra, *Carex pensylvanica*, *Ageratina altissima* var. *roanensis*

VEGETATION DESCRIPTION

Globally

This community includes forest vegetation, with a closed to very open canopy, where *Quercus rubra* makes up at least 75 percent of the tree canopy and with less than 20 percent shrub cover. Canopy trees may be gnarled and stunted, especially on ridge crests. Other canopy species may include *Acer rubrum*, *Crataegus punctata*, *Crataegus flabellata*, *Betula alleghaniensis*, *Betula lenta*, and, at high elevations, *Picea rubens*. An open subcanopy contains canopy species plus *Hamamelis virginiana*, *Amelanchier arborea*, *Acer pensylvanicum*, *Halesia tetraptera*, and *Ilex montana*. Herbaceous cover is dense and diverse, composed of sedges, ferns, and tall herbs, with dominance varying within and between occurrences. Typical herbaceous dominants include *Carex pensylvanica*, *Ageratina altissima* var. *roanensis*, *Thelypteris noveboracensis*, *Dennstaedtia punctilobula*, *Aster chlorolepis*, *Aster acuminatus*, and *Laportea canadensis*.

Great Smoky Mountains National Park

The canopy of this short-stature forest is strongly dominated by *Quercus rubra*. Other trees that may form a minor portion of the canopy and subcanopy include *Acer rubrum*, *Halesia tetraptera* var. *monticola*, and *Prunus serotina*. The shrub stratum is open with scattered shrubs, mostly *Halesia tetraptera* var. *monticola* and *Ilex montana*. Other species in the shrub stratum include *Acer pensylvanicum*, *Acer saccharum*, *Kalmia latifolia*, *Magnolia fraseri*, *Prunus serotina*, *Rubus canadensis*, *Vaccinium corymbosum*, and *Vaccinium erythrocarpum*. The herbaceous stratum is strongly dominated by *Carex pensylvanica*, which forms a dense carpet. Other herbaceous species include *Angelica triquinata*, *Aster chlorolepis*, *Clintonia umbellulata*, *Cuscuta rostrata*, *Dioscorea quaternata*, *Dryopteris intermedia*, *Gentianella quinquefolia* ssp. *quinquefolia*, *Lilium superbum*, *Maianthemum racemosum*, *Medeola virginiana*, *Mitchella repens*, *Prenanthes altissima*, *Smilax herbacea*, *Solidago caesia* var. *curtisii*, and *Thelypteris noveboracensis*.

OTHER NOTEWORTHY SPECIES

Animals that use this community include Red Squirrel (*Tamiasciurus hudsonicus*) and Eastern Chipmunk (*Tamias striatus*). Many species in this community are endemic to the southern Blue Ridge or have the bulk of their worldwide range in that region. Some of these endemics include *Abies fraseri*, *Aesculus flava*, *Ageratina altissima* var. *roanensis*, *Carex roanensis*, *Clethra acuminata*, *Euphorbia purpurea*, *Leucothoe recurva*, *Prenanthes roanensis*, *Rhododendron catawbiense*, *Rhododendron vaseyi*, *Silene ovata*, *Solidago caesia* var. *curtisii* and *Vaccinium erythrocarpum*.

CONSERVATION RANK G2

RANK JUSTIFICATION

This community is relatively secure within its range but has a naturally restricted habitat. Red oak decline is affecting occurrences of this community; fire may be needed for stand establishment.

DATABASE CODE C EGL007298

COMMENTS

Globally

This community occurs as smaller stands (30-100 acres) and is less common than other forests in this alliance. It often occurs adjacent to or grades into forests dominated by *Picea rubens*, *Abies fraseri*, or northern hardwood species (*Betula alleghaniensis*, *Fagus grandifolia*, *Aesculus flava*). In some areas, this community is found adjacent to montane shrublands and grasslands. This community is often referred to as a "Subalpine Oak Orchard Forest." Many *Quercus rubra*-dominated stands of today were, prior to the Chestnut Blight in the 1930s, dominated or codominated by *Castanea dentata* with scattered *Quercus rubra* and *Acer rubrum* in the canopy (Golden 1974). The fungus *Endothia parasitica* eliminated *Castanea dentata* in the upper canopy, subsequently releasing the subcanopy *Quercus rubra*, which eventually resulted in a nearly pure upper canopy of large *Quercus rubra*.

Great Smoky Mountains National Park

While the single sample of this community seems to represent the assigned association, the vegetation on the overall ridgeline may be more appropriately mapped as *Quercus rubra* / (*Vaccinium simulatum*, *Rhododendron calendulaceum*) / (*Dennstaedtia punctilobula*, *Thelypteris noveboracensis*) Forest (CEGL007300) or even as *Quercus rubra* Montane Forest Alliance, as it is unlikely that the various associations in this alliance will have distinguishable signatures.

REFERENCES

DeLapp 1978, Golden 1974, Schafale and Weakley 1990